

FIG. 1

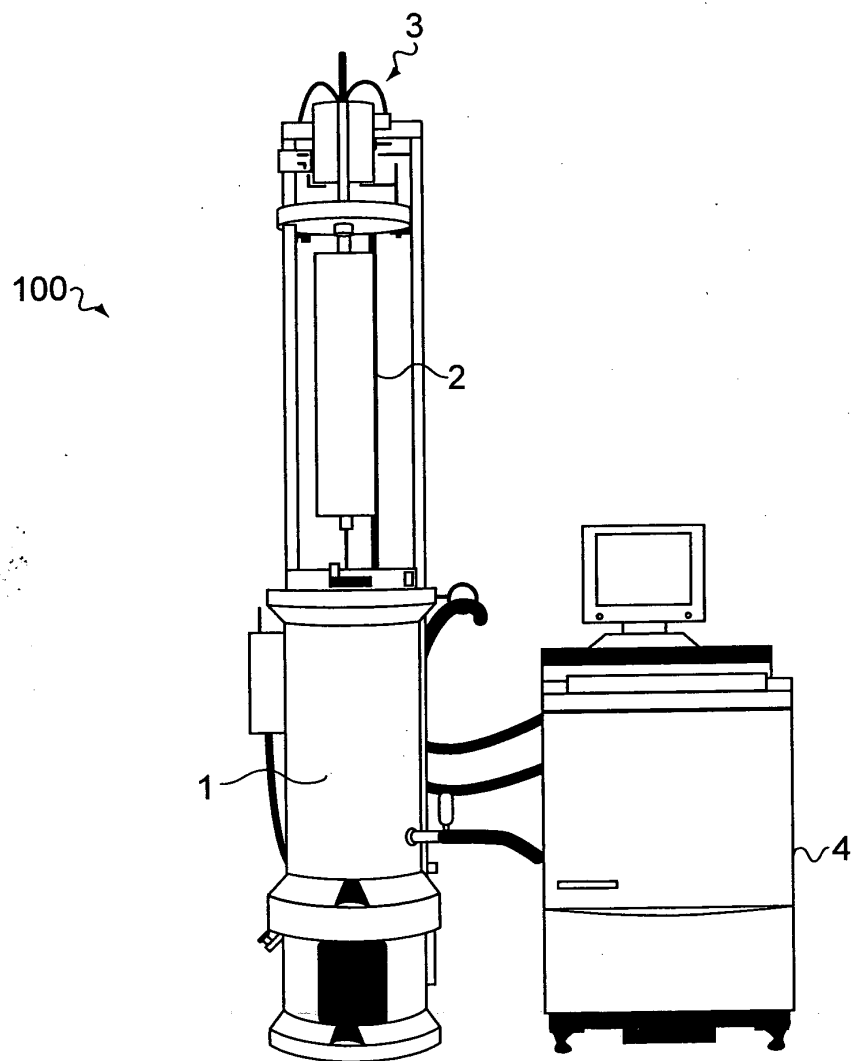


FIG. 1

Patented Apr 11, 1967

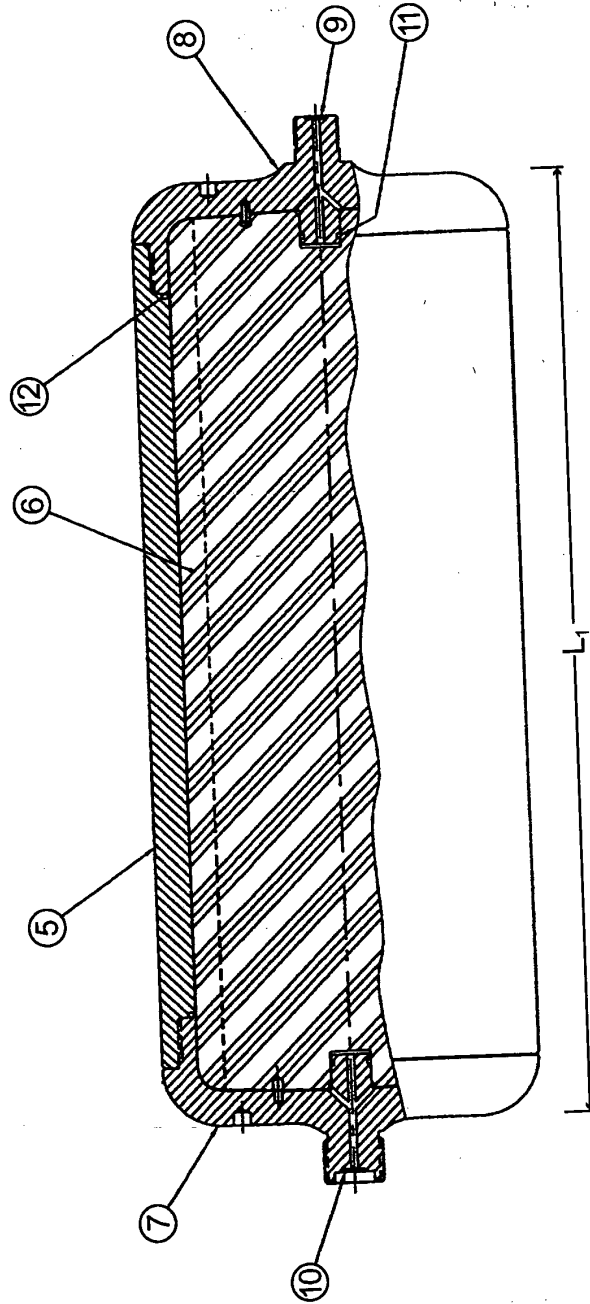


FIG. 2A

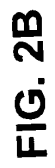


FIG. 2B

Patent # 4,205,660

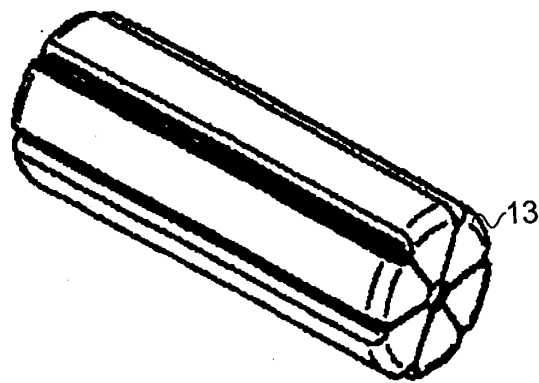


FIG. 3A

FIG. 3B

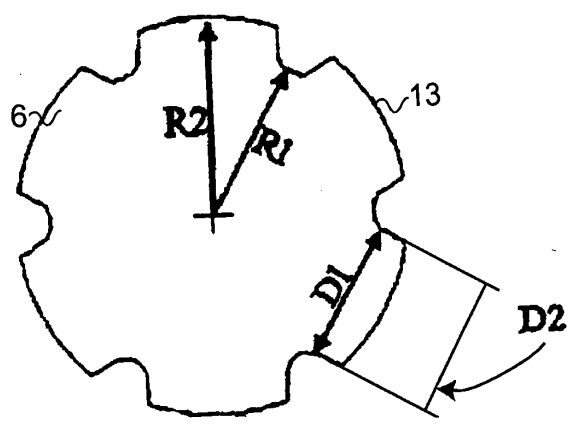


FIG. 3B

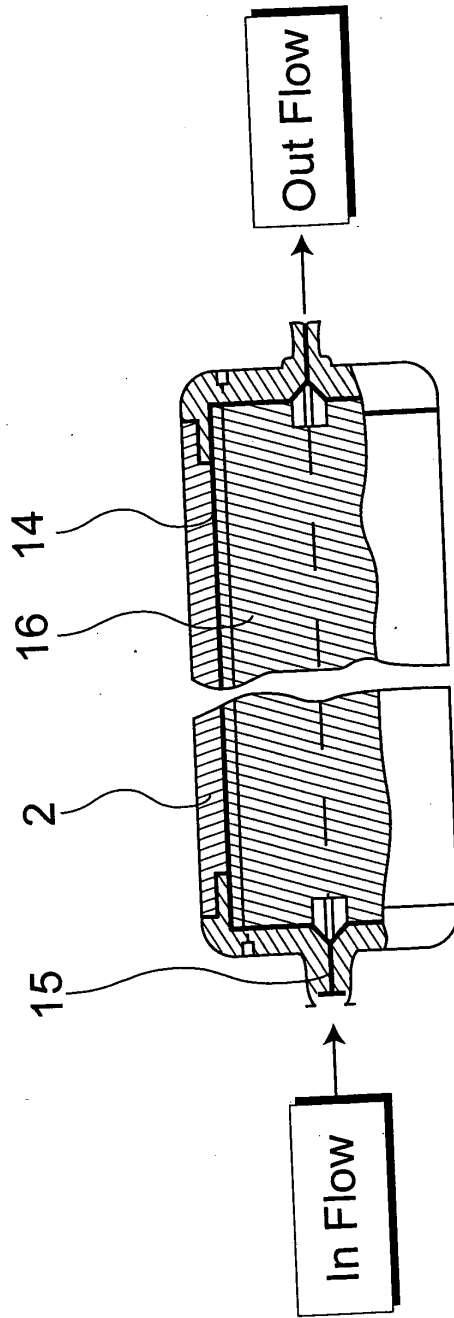


FIG. 4

Patented Feb. 22, 1966

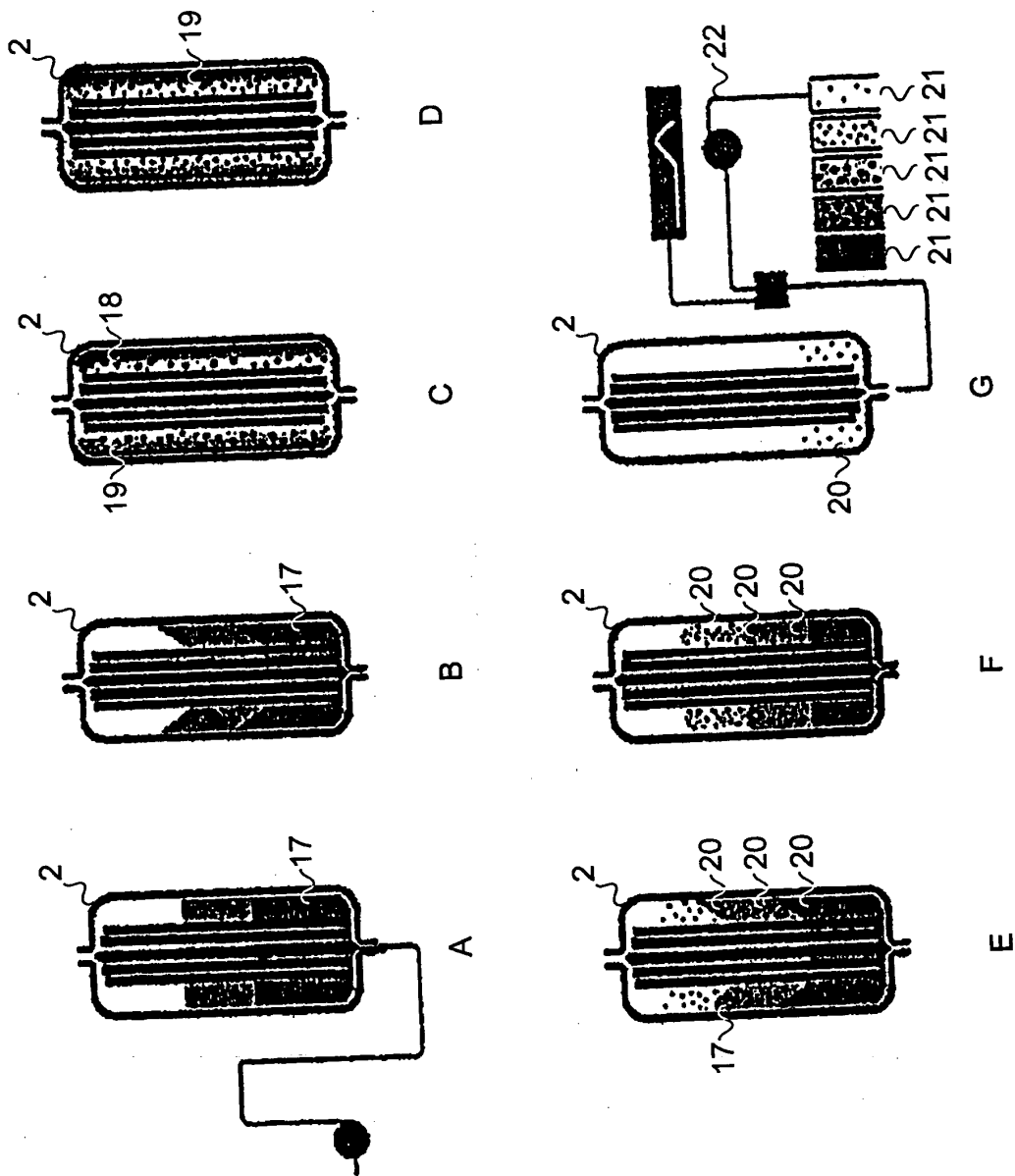


FIG. 5

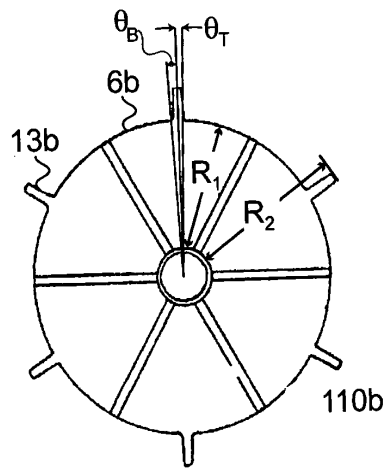


FIG. 6

[illegible]

FIG. 7

FIG. 8

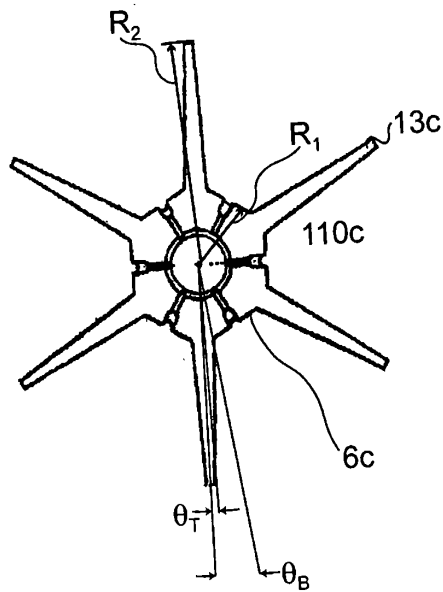


FIG. 8

FIG. 9

R2	66.0	Outer Radius of the Core in mm	2.598 inches		
R1	21.0	Inner Radius in mm	0.825 inches		
Theta-T		Angle formed by one-half the top fin surface in radians	0.0192	1.10275822 degrees	
Theta-B		Angle formed by one-half the bottom fin surface in radians	0.0192	7.6119838 degrees	
L	754.1	Length of the Core in mm			
V2	1031669.4	Total volume of the Cylinder:	1031669.4 mm ³	10317 mL	
V1	1040325.2	Total volume of the Core trunk:	1040325.2 mm ³	1040 mL	
W1	28415.5	Fin Volume Component 1:	28415.5 mm ³	341 mL	
C1	2.8	Length of the Chord formed for W2:	2.8 mm	0.110 inch	
W2	47172.1	Fin Volume Component 2:	47172.1 mm ³	566 mL	
Outer	31602.2	Outer	31602.2	3186.742	
Inner	62.6377	Inner	62.6377	0.085731	
Available Volume	8369.25	Available Volume	8369.25 mm ³	8.4 L	
D1		Lateral distance across fin bottom in mm	0.250 inches	(D2+0.031")	
D2		Lateral distance across fin top in mm	0.100 inches		
2.5					
0.100					
Calculated Theta-T in radians	0.0192	Calculated Theta-T in radians	0.0192	1.102758 degrees	
Calculated (Theta-T+Theta-B) in radians	0.1521	Calculated (Theta-T+Theta-B) in radians	0.1521	8.714742 degrees	
Calculated Theta-B in radians	0.1329	Calculated Theta-B in radians	0.1329	7.611984 degrees	
Calculated fin Wall Angle in radians	-1.5285	Calculated fin Wall Angle in radians	-1.5285	-87.57776 degrees	
Intermediate Terms		Intermediate Terms			
	0.999		0.999		
	0.954		0.954		
	45.0342		45.0342		
	-1.905		-1.905		

FIG. 9

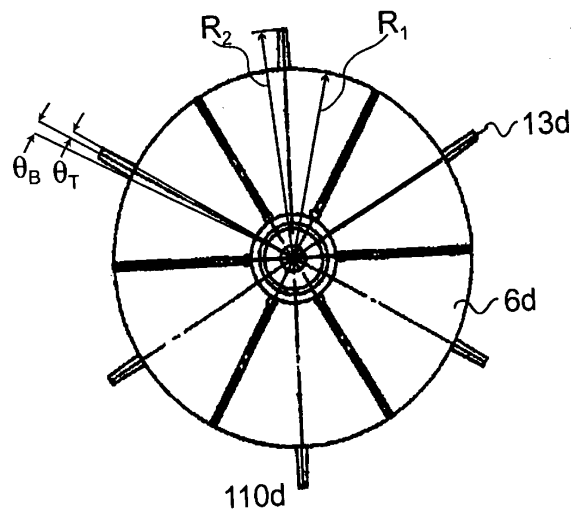


FIG. 10

FIG. 11

R2	66.0	Outer Radius of the Core in mm	2.598 inches	10434 mL	Outer	Inner
R1	54.3	Inner Radius in mm	2.145 inches	7109 mL	26527.04	18074.35
Theta-T	57.3	Angle formed by one-half the top fin surface in radians	0.91527174 degrees	101 mL		
Theta-B		Angle formed by one-half the bottom fin surface in radians	0.60780781 degrees	0.023 inch		
L	762.7	Length of the Core in mm		30 mL	3.327887	0.000295
V2	30.027	Total volume of the Cylinder:				
V1		Total volume of the Core trunk:	10433770.0 mm ³			
W1		Fin Volume Component 1:	7109107.3 mm ³			
C1		Length of the Chord formed for W2:	8452.7 mm ³			
W2		Fin Volume Component 2:	0.6 mm			
			2537.9 mm ³			
D1		Lateral distance across fin bottom in mm	0.114 inches (D2+0.031")			
D2	2.1	Lateral distance across fin top in mm	0.083 inches			
		Calculated Theta-T in radians	0.915272 degrees			
		Calculated (Theta-T+Theta-B) in radians	1.52308 degrees			
		Calculated Theta-B in radians	0.607808 degrees			
		Calculated fin Wall Angle in radians	-88.04247 degrees			
		Intermediate Terms	0.999			
			0.999			
			11.5189			
			-0.3937			

FIG. 11

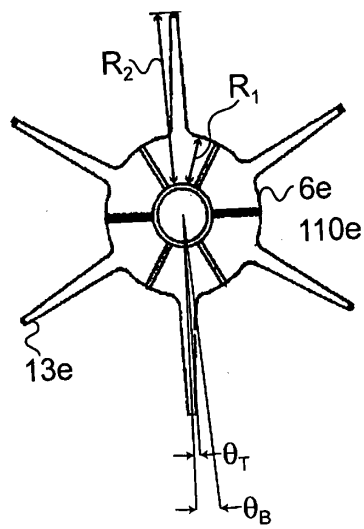


FIG. 12

66.0	R2	Outer Radius of the Core in mm	2.593 inches		
26.7	R1	Inner Radius in mm	1.052 inches		
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0217	1.2461381 degrees	
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0844	4.8379852 degrees	
764.3	L	Length of the Core in mm			
100090	V2	Total volume of the Cylinder:	10455661.2 mm^3	10456 mL	
	V1	Total volume of the Core trunk:	1714370.5 mm^3	1714 mL	
	W1	Fin Volume Component 1:	30257.9 mm^3	363 mL	
	C1	Length of the Chord formed for W2:	2.3 mm	0.089 inch	
	W2	Fin Volume Component 2:	33818.5 mm^3	406 mL	
		Available Volume	972.37 mm^3	3.0 L	
	D1	Lateral distance across fin bottom in mm	0.223 inches	(D2+0.031")	5.6642
2.9	D2	Lateral distance across fin top in mm	0.113 inches		
0.133		Calculated Theta-T in radians	0.0217	1.246138 degrees	0.999
		Calculated (Theta-T+Theta-B) in radians	0.1062	6.084127 degrees	0.978
		Calculated Theta-B in radians	0.0844	4.837989 degrees	
		Calculated fin Wall Angle in radians	-1.5352	-87.96252 degrees	39.2684
					-1.397

FIG. 13

FIG. 14

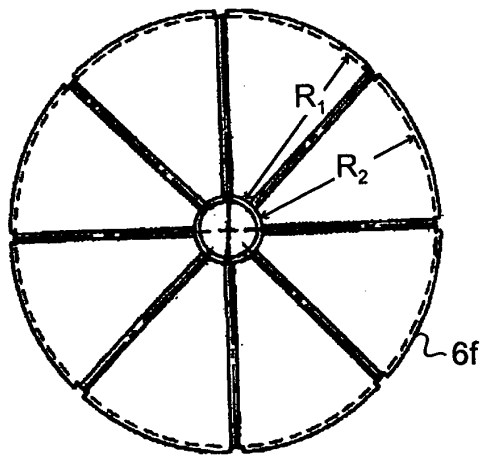


FIG. 14

764.3 L

66.0 R2	Outer Radius of the Core in mm	2.598	Inches	0.102	
66.0 R1	Inner Radius in mm	2.561	Inches	0.101	
Theta-T	Angle formed by one-half the top fin surface in radians	0.0000		0 degrees	
Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0000		0 degrees	
764.3 L	Length of the Core in mm				
V2	Total volume of the Cylinder:	10455661.2	mm^3	10456	mL
V1	Total volume of the Core trunk:	10159968.6	mm^3	10160	mL
W1	Fin Volume Component 1:	0.0	mm^3	0	mL
C1	Length of the Chord formed for W2:	0.0	mm	0.000	inch
W2	Fin Volume Component 2:	0.0	mm^3	0	mL
Available Volume: 29569 mm^3					
D1	Lateral distance across fin bottom in mm	0.000	inches	(D2+0.031")	0.0000
D2	Lateral distance across fin top in mm	0.000	inches		
0.0	Calculated Theta-T in radians	0.0000		0 degrees	
0.000	Calculated (Theta-T+Theta-B) in radians	0.0000		0 degrees	
	Calculated Theta-B in radians	0.0000		0 degrees	
	Calculated fin Wall Angle in radians	#DIV/0!		#DIV/0!	degrees
	Intermediate Terms			1.000	
				1.000	
				0.9398	
				0	

FIG. 15

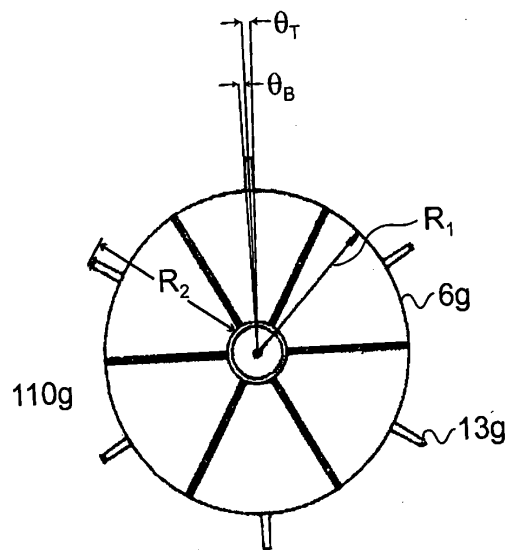


FIG. 16

66.0	R2	Outer Radius of the Core in mm	2.598 inches	5.196
54.5	R1	Inner Radius in mm	2.145 inches	4.29
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0150	0.91527174 degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0106	0.6074527 degrees
382.1	L	Length of the Core in mm		
	V2	Total volume of the Cylinder:	5227135.7 mm ³	5227 mL
	V1	Total volume of the Core trunk:	3563198.9 mm ³	3563 mL
	W1	Fin Volume Component 1:	4230.4 mm ³	51 mL
	C1	Length of the Chord formed for W2:	0.6 mm	0.023 inch
	W2	Fin Volume Component 2:	1269.6 mm ³	15 mL
			Outer	Inner
			13289.58	9059.154
			3.32305	0.000295
		Available Volume		2.8956
	D1	Lateral distance across fin bottom in mm	0.114 inches	(D2+0.031")
	D2	Lateral distance across fin top in mm	0.083 inches	
2.1				
0.083				
		Calculated Theta-T in radians	0.0160	0.915272 degrees
		Calculated (Theta-T+Theta-B) in radians	0.0266	1.522724 degrees
		Calculated Theta-B in radians	0.0106	0.607453 degrees
		Calculated fin Wall Angle in radians	-1.5366	-88.04031 degrees
		Intermediate Terms	0.999	0.999
			11.5062	-0.3937

FIG. 17

FIG. 18

R2	Outer Radius of the Core in mm	2.598	Inches
R1	Inner Radius in mm	2.145	Inches
Theta-T	Angle formed by one-half the top fin surface in radians	0.752	14.4433492 degrees
Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0625	3.57949303 degrees
L	Length of the Core in mm	382.1	
V2	Total volume of the Cylinder:	5227135.7	mm^3
V1	Total volume of the Core trunk:	3561538.0	mm^3
W1	Fin Volume Component 1:	66824.5	mm^3
C1	Length of the Chord formed for W2:	3.4	mm
W2	Fin Volume Component 2:	7405.1	mm^3
Available Volume:			
339.7058			
D1	Lateral distance across fin bottom in mm	1.327	Inches (D2+0.031")
D2	Lateral distance across fin top in mm	1.296	Inches
Calculated Theta-T in radians	0.2521	14.44335	degrees
Calculated (Theta-T+Theta-B) in radians	0.3146	18.02284	degrees
Calculated Theta-B in radians	0.0625	3.579493	degrees
Calculated fin Wall Angle in radians	-1.5366	-88.04247	degrees
Intermediate Terms	0.876	0.809	
	11.5189	-0.3937	

FIG. 18

FIG. 19

R2	382.1	Outer Radius of the Core in mm	5.196	
R1	50.5	Inner Radius in mm	4.29	
Theta-T		Angle formed by one-half the top fin surface in radians	20.8573877	degrees
Theta-B		Angle formed by one-half the bottom fin surface in radians	5.14837464	degrees
L		Length of the Core in mm	0.3899	
V2		Total volume of the Cylinder:	5227	mL
V1		Total volume of the Core trunk:	3563	mL
W1		Fin Volume Component 1:	1157	mL
C1		Length of the Chord formed for W2:	0.193	inch
W2		Fin Volume Component 2:	126	mL
Available Volume				
D1	47.0	Lateral distance across fin bottom in mm	1.881	inches
D2	1.850	Lateral distance across fin top in mm	1.850	inches
Intermediate Terms				
		Calculated Theta-T in radians	20.85739	degrees
		Calculated (Theta-T+Theta-B) in radians	26.00576	degrees
		Calculated Theta-B in radians	5.148375	degrees
		Calculated fin Wall Angle in radians	-88.04031	degrees
		Outer	302845.5	
		Inner	27.69047	
			0.179394	
			0.746	
			0.616	
			11.5062	
			-0.3937	

FIG. 19

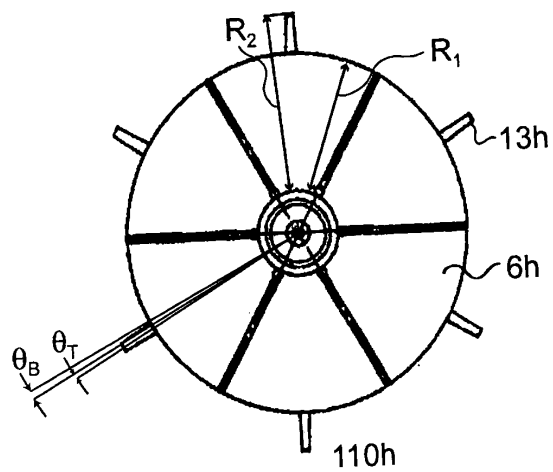


FIG. 20

R2	Outer Radius of the Core in mm	2.593	Inches
R1	Inner Radius in mm	2.145	Inches
Theta-T	Angle formed by one-half the top fin surface in radians	0.0013	1.25716763 degrees
Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0013	0.6802237 degrees
L	Length of the Core in mm	330.5	
V2	Total volume of the Cylinder:	5205244.4	mm^3
V1	Total volume of the Core trunk:	3546622.3	mm^3
W1	Fin Volume Component 1:	5792.1	mm^3
C1	Length of the Chord formed for W2:	0.6	mm
W2	Fin Volume Component 2:	1416.9	mm^3
	Available Volume:	5205	mm^3
D1	Lateral distance across fin bottom in mm	0.145	inches
D2	Lateral distance across fin top in mm	0.114	inches
		(D2+0.031")	
		0.999	Intermediate Terms
		0.998	
	Calculated Theta-T in radians	1.257168	degrees
	Calculated (Theta-T+Theta-B) in radians	1.937391	degrees
	Calculated Theta-B in radians	0.680224	degrees
	Calculated fin Wall Angle in radians	-88.04247	degrees
		11.5189	-0.3937

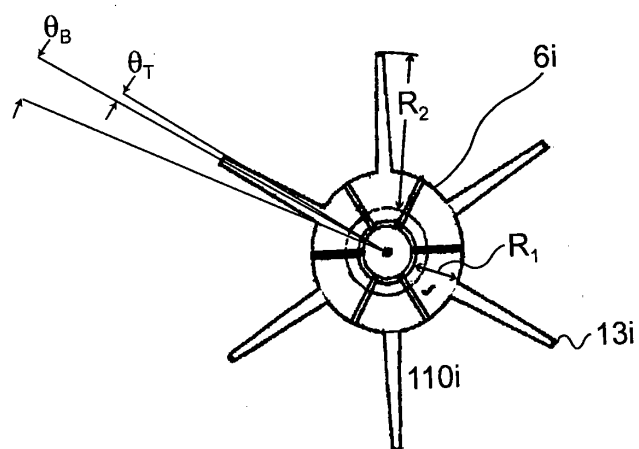


FIG. 22

FIG. 23

R2	382.1	Outer Radius of the Core in mm	2.598 inches
R1	26.7	Inner Radius in mm	1.052 inches
Theta-T		Angle formed by one-half the top fin surface in radians	1.2461381 degrees
Theta-B		Angle formed by one-half the bottom fin surface in radians	7.30918223 degrees
L	382.1	Length of the Core in mm	
V2	5227	Total volume of the Cylinder:	5227 mL
V1	857	Total volume of the Core trunk:	857 mL
W1	182	Fin Volume Component 1:	182 mL
C1	0.134	Length of the Chord formed for W2:	0.134 inch
W2	306	Fin Volume Component 2:	306 mL
Available Volume = 319 L			
D1		Lateral distance across fin bottom in mm	0.313 inches (D2+0.031")
D2		Lateral distance across fin top in mm	0.113 inches
2.9		Calculated Theta-T in radians	0.0217
0.1493		Calculated (Theta-T+Theta-B) in radians	0.1493
0.1276		Calculated Theta-B in radians	0.1276
-1.5062		Calculated fin Wall Angle in radians	-1.5062
0.999		Intermediate Terms	0.999
0.956			0.956
39.2684			39.2684
-2.54			-2.54

FIG. 23

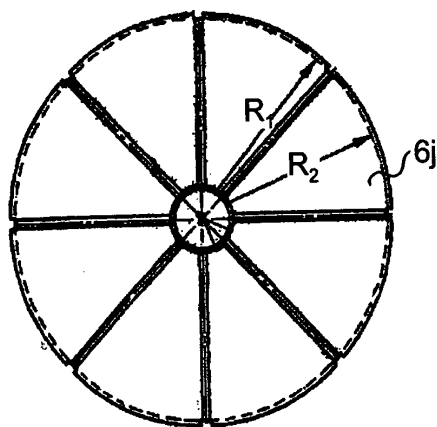


FIG. 24

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

R2	66.0	Outer Radius of the Core in mm	2.598	Inches	0	degrees
R1	65.0	Inner Radius in mm	2.561	Inches	0	degrees
Theta-T		Angle formed by one-half the top fin surface in radians	0.0000		0	degrees
Theta-B		Angle formed by one-half the bottom fin surface in radians	0.0000		0	degrees
L	382.1	Length of the Core in mm				
V2	5227135.7	Total volume of the Cylinder:			5227	mL
V1	5079309.0	Total volume of the Core trunk:			5079	mL
W1	0.0	Fin Volume Component 1:			0	mL
C1	0.0	Length of the Chord formed for W2:			0.000	inch
W2	0.0	Fin Volume Component 2:			0	mL
Available Volume						
D1		Lateral distance across fin bottom in mm	0.000	inches	(D2+0.031")	0.0000
D2	0.0	Lateral distance across fin top in mm	0.000	inches		
Calculated Theta-T in radians						
Calculated (Theta-T+Theta-B) in radians						
Calculated Theta-B in radians						
Calculated fin Wall Angle in radians						
#DIV/0!						
Intermediate Terms						
0 degrees						
0 degrees						
0 degrees						
#DIV/0! degrees						
0.9398						
0						

FIG. 25

FOUO 4505650

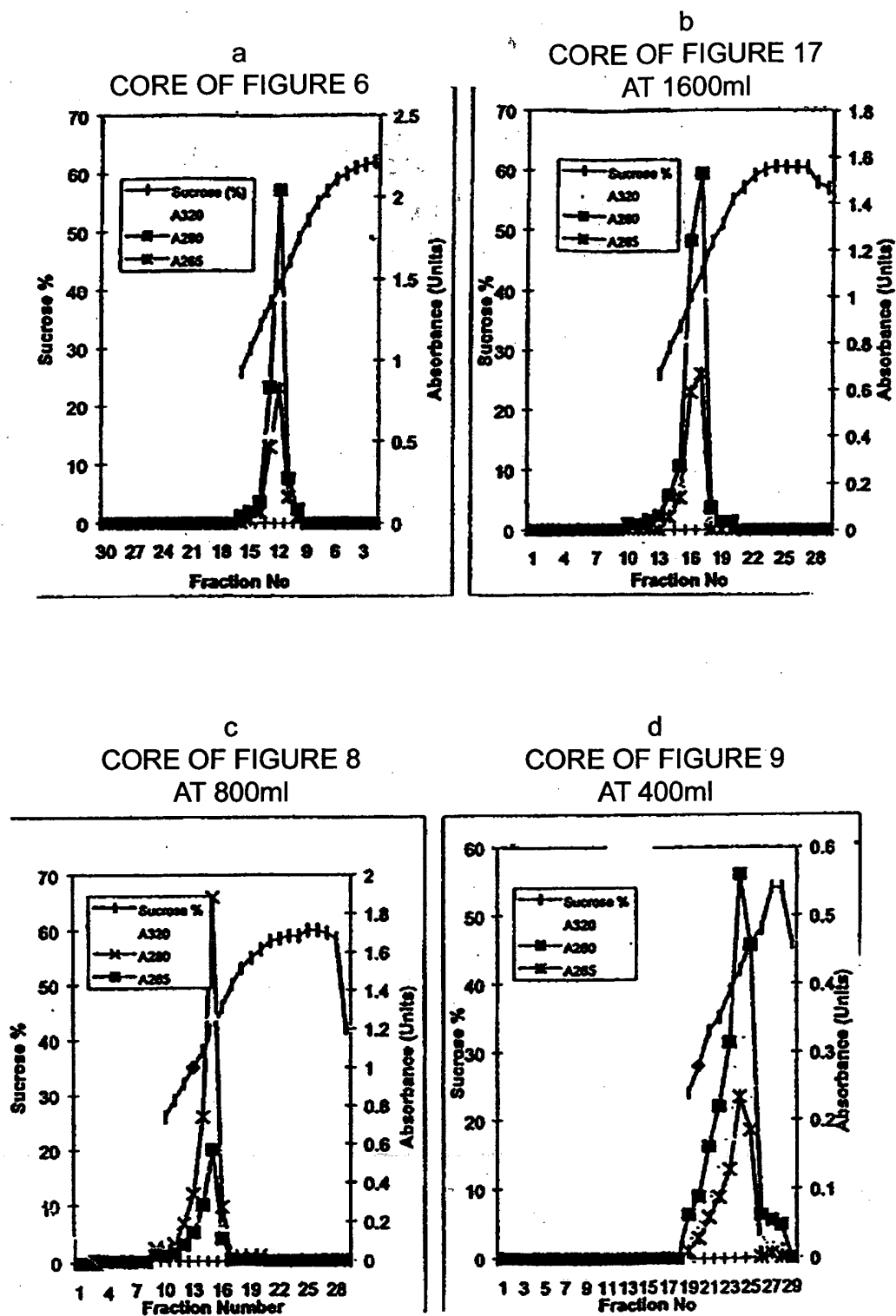


FIG. 26.